CLAIMS

1. A method for preventing or reducing an ischemia-reperfusion injury, comprising administering to a subject in need thereof an effective amount of a free radical scavenger intra-arterially or intravenously prior to, concurrently with, or following reperfusion.

2. The method according to claim 1 wherein the free radical scavenger is administered in an amount sufficient for the serum concentration of the scavenger to be from about 1 mM to 40 mM.

3. The method according to claim 1 wherein the free radical scavenger is a thiol-containing compound.

4. The method according to claim 1 wherein free radical scavenger is selected from the group of consisting of N-acetylcysteine, sodium thiosulfate, glutathione ethyl ester, glutathione, D-methionine, cysteamine, cystamine, aminopropylmethylisothiourea, and Ethyol.

5. The method according to claim 1 wherein the free radical scavenger is N-acetylcysteine.

6. The method according to claim 1 wherein the ischemia-reperfusion injury is an infarction, and wherein the volume of the infarction is reduced.

7. The method according to claim 6 wherein the infarction is in the brain.

8. The method according to claim 1 wherein the ischemia-reperfusion injury is a cerebral injury.

9. The method according to claim 1 wherein the ischemia-reperfusion injury is cerebral hemorrhage.

10. The method according to claim 1 wherein the ischemia-reperfusion injury is associated with a cardiopulmonary bypass procedure.

11. The method according to claim 10 wherein the cardiopulmonary bypass procedure is performed using a cardiopulmonary bypass circuit.

12. The method according to claim 10 wherein the cardiopulmonary bypass procedure is coronary artery bypass grafting.

13. The method according to claim 10 wherein the ischemia-reperfusion injury is cognitive dysfunction.

14. The method according to claim 1 wherein the free radical scavenger is administered intravenously.

15. The method according to claim 1 wherein the free radical scavenger is administered intra-arterially.

16. The method according to claim 15 wherein the free radical scavenger is administered via carotid artery.

17. The method according to claim 1 wherein the free radical scavenger is administered prior to reperfusion.

18. The method according to claim 8 wherein the free radical scavenger is delivered to the central nervous system.

19. The method according to claim 10 wherein the free radical scavenger is administered at least 15 minutes prior to the bypass procedure.

20. The method according to claim 10 wherein the free radical scavenger is administered at least 15 minutes prior to the bypass procedure.

21. The method according to claim 10 wherein the free radical scavenger is administered at least 30 minutes prior to the bypass procedure.

22. The method according to claim 10 wherein the free radical scavenger is administered at least 60 minutes prior to the bypass procedure.

23. The method according to claim 10 wherein the free radical scavenger is administered at least 90 minutes prior to the bypass procedure.

24. The method according to claim 1 wherein the free radical scavenger is administered in an amount sufficient for the serum concentration of the scavenger to be from about 3 mM.

25. The method according to claim 1 wherein the free radical scavenger is administered in an amount sufficient for the serum concentration of the scavenger to be from about 10 mM.